PROCEEDINGS OF SCIENTIFIC SOCIETIES.

Boston Society of Natural History.—The general meeting was held Wednesday evening, April 7, 1897.—The following papers were read: Prof. J. Eliot Wolff, "The occurrence of Tourmalines at Mt. Mica, Paris, Me.;" Dr. C. B. Davenport, "The rôle of water in growth." Wednesday evening, April 21, 1897.—The following paper was read: Mr. Herbert Lyon Jones, "Some biological adaptations of our seaside plants." Stereopticon views were shown.—SAMUEL HENSHAW, *Secretary.*

New York Academy of Sciences.—Biological Section.—March 8, 1897.—The papers presented were: H. E. Crampton, "On the Ascidian Half Embryo." His experimental studies on the egg of *Molgula manhattensis* showed that the isolated blastomeres segment in a strictly 'partial' manner, but that a gradual passage to a total development ensues. As far as the early stages were concerned Chabry, Roux, Barfurth are entirely correct in arguing for a half or 'partial' development. But Driesch, Hertwig and others are also correct in considering the end results a 'total' larva of less than the normal size. The paper will be published in full.

N. R. Harrington, "On a Nereid from Puget Sound (Pacific Coast) which lives commensally with the Hermit crab, *Eupagurus alaskensis.* A variety of the Western European species *N. fucata* is known to inhabit deserted whelk shells with *Eupagurus bernhardus* and a careful comparison of the Old and the New World forms brings out resemblances in structure due to the operation of the same physiological factors. These are notably (1) the degeneration of the muscular and cuticular layers in the posterior two-thirds of the body, (2) loss of the pigment in the same, (3) physiological factors may explain why only females have been found (as yet) in this comfortable and nutritive habitat. The author surmises that the commensal form is the female Epitocous type of some free living nereid.

This apparently undescribed species from the Pacific differs from *N. fucata, B. inquilina* of Wirèn in the arrangement of the paragnathi, respiratory lobes of notopodium and transverse pigment stripes.

Bashford Dean, "A Posthumous Memoir of Prof. J. S. Newberry. This paper described new species and a new genus of North American fossil fishes, and discussed the genera Oracanthus, Dactylodus, Polyrhizodus, Sandalodus, and Petalodus.

Among the types were species of Cladodus, Oracanthus, Ctenacanthus, Stettacanthus, Asteroptychius, Dactylodus, Deltodus, Sandalodus, Psephodus, Heliodus, Ctenodus. *Dinichthys corrugatus* was taken as a type of a new genus Stenognathus.

At the conclusion of the papers, an election of sectional officers was held. Prof. E. B. Wilson was elected chairman for the ensuing year, Prof. C. L. Bristol, Secretary.—BASHFORD DEAN, *Secretary.*

New York Academy of Sciences.—Section of Geology.—March 15, 1897.—The first communication of the evening was by Mr. Hienrich Ries entitled "Mineralogical Notes." Mr. Ries spoke of some Allanite crystals with new faces; also of some large crystals of fibrous gypsum from Newcastle, Wyoming; also exhibited some large Childrenite crystals from Maine and some Amphibole crystals with many terminal faces from Virginia. He also spoke of some Pseudomorphs of gold after Sylvenite from Cripple Creek, Colorado, The finding of a new Beryl crystal with an unusually large number of terminal faces in New York City was also noted.

The second paper of the evening was written by Mr. Herbert Bolton, entitled "The Lancashire Coal Field of England" and read in abstract by President Stevenson. The paper spoke of the geographic conditions of the Lancashire coal field and its neighborhood, of the extent and quality of the coal and of the age of the structural movements which had caused the present geological characteristics in the coal area. A careful correlation was made between the coal measures of this field and the deposits of the United States. Distribution of the fauna and flora and their character was taken up in some detail and it was shown that in the lower coal measures the life is mostly marine, in the middle coal measures of fresh and brackish origin, and in the upper coal measures that the fauna was scarce. When published this paper will be a valuable contribution to the literature of coals and will be of great assistance to workers in America in their endeavors to correlate the deposits on the two side of the water.

The third paper of the evening was by Stuart Weller, of Chicago University, entitled "The Batesville Sandstone of Arkansas," abstracted by Mr. Gilbert Van Ingen. The paper entered into some detail regarding the Batesville section and the fauna of the Batesville sandstone in that section. Of the invertebrates thirty species have been found, of which eleven point to the St. Louis age of the sandstone, six to the Kaskaskia age, while thirteen are of indeterminate value. On account of the greater abundance of the numbers of specimens of the

second group and from stratigraphic evidence as well, it is probable that the sandstone belongs in the base of the Kaskaskia group and is the same as the Aux Vasa limestone of Southern Illinois. This paper gives the data wherein to correlate the Mississippian section with the section about the Ozark Hills.—April 19, 1897.—The evening of the monthly meeting of the Section was devoted to a reception by the whole Academy to Sir Archibald Geikie, Director-General of H. M. Geological Survey of Great Britian, who has just returned to this country for a brief visit after an absence of eighteen years. After an informal reception the meeting was called to order and addressed briefly by the President of the Academy, Prof. J. J. Stevenson, who extended a most hearty welcome from the scientists of New York to the guest of the evening. Prof. Stevenson was followed by Prof. J. F. Kemp, the Chairman of the Section, who reviewed in a few words the greater contributions of Sir Archibald Geikie to the cause of Geology. He spoke of his early work in Scotland, in France and in the Western United States in the study of vulcanism, and paid particular attention to the work that had been done in Scotland on the metamorphic rocks. Prof. Kemp concluded with a tribute to Sir. Archibald as a naturalist and spoke of the superior quality of work that is given the world by the man who is in love with nature and finds in the solitude of the wildness of nature his greatest company and inspiration.

The next speaker was the Secretary of the Section who spoke particularly of the work of Sir Archibald Geikie as looked at from the standpoint of the teacher and physiographer. He reviewed hastily the character and quality of Geikie's Text Book and Class Book of Geology and spoke more especially of the example this distinguished geologist has set in physiography in the masterly analysis of the physical features of Scotland given in his Scenery of Scotland.

The last address of welcome was given by Prof. Angelo Heilprin of Philadelphia who spoke as a traveler and contrasted the knowledge of the geology of the world now with our knowledge at the time of Humboldt. He spoke of how much we owed to the guest we were welcoming for his work in bringing together the shreds of knowledge from all parts of the world and in building up a great mass of geological information, which is a vast help to all workers in geology and a stimulus to all.

In reply Sir Archibald Geikie expressed his thanks to the Academy for the very cordial reception that had been tendered him in New York. He contrasted the appearance of the city eighteen years ago and now, and spoke of the great growth of New York vertically as well

as horizontally. He paid a brief word of tribute to his friends of his former visit, particularly Newberry, Leidy, Dana, Cope and Hayden, whose help and good will have ever been a great inspiration to him.

In reviewing the work of world wide reputation that the American geologists are producing, Sir Archibald Geikie paid a warm tribute to their industry, their perseverance, their breadth and to their scientific acuteness. He contrasted in a very favorable way to the United States the policy of the British and United States Governments in regard to the printing, publishing and distribution of government reports.

After these brief addresses an opportunity was given for meeting the guest of the evening for personal social meetings among the members of the Academy, and for greeting the guests from a distance including several well known geologists.—RICHARD E. DODGE, *Secretary.*

Torrey Botanical Club.—At the regular meeting of Feb. 9th, about 200 persons present, the scientific program consisted of a lecture by Mr. Henry A. Siebrecht, entitled "Orchids, their habitat, manner of collecting and Cultivation"; handsomely illustrated with lantern-slides by Mr. Cornelius Van Brunt, colored by Mrs. Van Brunt.

Mr. Siebrecht in his paper referred to the hardships undergone by the orchid-collector, and paid a tribute to the energy displayed by three friends of the speaker, Carmiole, an Italian, who had come to New York when the speaker was a boy; Föstermann, who died about two years ago, the victim, like most collectors, of disease contracted in that enterprise; and Thieme, who had made three trips for Mr. Siebrecht, and who went last to Brazil in search of the *Cattleya autumnalis* but was never heard from.

Mr. Siebrecht referred also to three trips of his own in quest of orchids, to the West Indies, Venezuela, Brazil and Central America. He then exhibited the lantern views, which were of remarkable beauty and evoked frequent applause. They included numerous representatives of the chief tropical genera cultivated, also with views of interiors showing the Cattleys house in full blossom, etc. Slides showing numerous species native to the Eastern United States, followed.

Mr. Siebrecht then described the culture of orchids and classed their diseases, as chiefly because too wet, when the "spot" closes the stomata, or too dry, when they collect insects. He referred to their insect enemies at home, the "Jack-Spaniard" which eats the marrow from the bulb, and the Cattleya-fly, now introduced into English houses. He mentioned the ravages of *Cladosporium*, and the great difficulty with which orchids of the genus *Phalænopsis* are preserved from fungal diseases.

The subject was further discussed by the President, Dr. Britton, Mr. Samuel Henshaw, and Mr. Livingston, the latter referring to his recent experience as an orchid collector. A slide was exhibited, made from a photograph taken by Mr. Livingston showing his orchids packed upon oxen and so carried down from the mountains to Magdalena.

Mr. Henshaw spoke of his visit to Mr. Siebrecht's nursery in Trinidad, and of the growth made there by Crotons, as much in one year as here in four or five. In those gardens they divide their plants by rows and edges of Crotons which are sheared off as we would trim a privet-hedge. Mr. Henshaw also paid a deserved tribute to Mrs. Van Brunt for the wonderful success of their coloring of the orchid slides.

February 24, 1897.—The first paper was by Mr. Arthur Hollick, "A fossil *Arundo* from Staten Island."

This paper, which is to appear in the *Bulletin*, was presented by Dr. Britton, with prefatory remarks referring to this discovery. Its occurrence was in yellow sand of Staten Island belonging to late Tertiary or early Quaternary; the locality, a pit near Fort Wadsworth. The preliminary reference to *Phragmites* is now changed by Mr. Hollick to the tropical genus *Arundo*.

A paper followed by Mr. E. O. Wooten, "Remarks on some of the rarer Plants of New Mexico."

Mr. Wooton sketched briefly the botanical regions of New Mexico, dividing the territory by differences in the flora into (a) the river valleys, (b) the table-lands or *mesas*, (c) the dry, rocky and narrow mountain ranges, and (d) those areas which are of uniformly high altitude and have numerous mountain ranges closely associated and more or less timbered. He also traced upon a map the routes trasvered by most of the botanical collectors who have visited New Mexico, beginning with Pike and including Long, Gregg, Wislizenus in 1846, Emory, Marcy, Sitgreaves, and Woodhouse, with the work of the Mexican Boundary and other surveys, 1849 and after. Mr. Wooten was himself practically the first to make collections in the south-east section of the territory, a very interesting, botanical region, with high mountains, some of which were illustrated by photographs. Specimens of Mr. Wooton's collecting were then shown exhibiting about 35 flowering plants and ferns, and including among those familiar in the east, *Pellæa atropurpures*, *Cystopteris fragilis*, *Pteris aquilina* and *Cheilanthes tomentosa*.

Discussing Mr. Wooton's presentation, Dr. Rusby spoke of his own former travels in New Mexico, and of various incidents of that journey, as of the discovery of *Primula Parryi* on the top of Gray's Peak (cen-

tral Arizona) blooming on July 2d under three or four inches of snow which had just fallen.

Mr. Rydberg compared some of the features presented by the sand region of Central Nebraska; referred to *Muhlenbergia pungens* and other so-called "*blow-out grasses*" of the sand-hills; and described the formation of the characteristic "blow-outs" or hollows, originating in spots where the grasses had died out, and deepening rapidly, sometimes to 300 feet, producing a country where the hills are moving every year, and where when camping he could find no fuel except roots of sand-cheeries exposed along fresh "blow-outs."

Discussion by Dr. Allen, Mr. Wooton and Dr. Rusby followed relative to the loco-weed poison. Mr. Wooton said that species (formerly *Oxytropis*) *lamberti* is the chief *loco-weed* about Flagstaff (Arizona); that cattle men claim that the well fed animal will not touch it, but that those which have formed the taste will not eat anything else. Reasons were urged by the speakers for the belief that the results of the loco-weed are due simply to mal-nutrition, or to effect of seeds alone, or to a posion (as extracted by Sheldon) diffused in very minute quantities throughout the plant.

The next paper was by Dr. H. M. Richards of Barnard College, "On some of the Reactions of Plants toward Injury."

Dr. Richards spoke on certain effects of wounding upon the functions of various plant organs as shown by his own experiments in Germany last summer. Diagrams illustrating the effect of injury upon both respiration and temperature were shown. In the former case it was seen that the respiration is greatly increased by wounding, attaining its maximum about 24 hours after the injury was inflicted; this increase depending both on the stimulus of the wound itself and upon the access of atmospheric oxygen to the tissues. The occurrence of a corresponding rise in temperature, of a local nature, was also briefly referred to; the temperature curve corresponding closely to that described by the increased respiratory activity. The thermœlectric apparatus used was described; its delicacy is such as to indicate a difference of $\frac{1}{400}$ of a degree; the result with potatoes showing a maximum rise of temperature of a little over $\frac{2}{10}$ of a degree at the end of the second day, falling to the end of the 5th day. A remarkable temperature rise in the onion of nearly $3\frac{1}{2}$ degrees was explained by the fact that here the rise was not local but affected the whole onion, in accordance with its morphological structure, and with the fact that metabolism is carried on very fast in the onion.

The paper was discussed by Dr. Jelliffe and by Dr. Britton, especially with regard to the sudden escape of CO_2 after wounding, Dr. Richards considering it to be due largely to contents of intercellular spaces, but partly to solution within the cells; potatoes contain a very considerable amount of enclosed CO_2, a quart of it being obtained from a pound of potatoes. Dr. Richards distinguished carefully the coincident but independent escape of a slight amount of CO_2 always given off, even in pure hydrogen; to be called "intermolecular respiration."

The next paper was a contribution read by title, from Dr. Alexander Zahlbrückner of Vienna, a corresponding member of the club, entitled, "Revisio Lobeliacearum Boliviensium hucusque cognitarum." The paper, which is in Latin, enumerates all the species, giving synonymy and references to the literature, and cites collectors and their numbers. There are 39 species, as follows: 9 in *Centropogon*, 2 new; 20 in *Siphocampylos*, 7 new; 1 in *Laurentia;* 2 in *Rhizocephalum;* 3 in *Hypsela;* 4 in *Lobelia.* The paper will be printed in the *Bulletin.*

Tuesday evening, March 9, 1897.—The evening was devoted to ferns with papers as follows:

1. Mrs. Elizabeth G. Britton, "Notes on some Mexican Ferns;" presented in Mrs. Britton's absence by Dr. Rusby, with exhibition of numerous specimens, including species of Pellæa, Polypodium, Cystopteris and Cheilanthes. Dr. Rusby, having been himself present at their collection, described vividly the tongue of hard, black lava on which the collectors walked, and which was filled with large cavities often forming caves, containing some accumulation of soil and crowded with a luxuriant growth of ferns although in November and practically the winter season.

2. Mr. Willard N. Clute, "The New York Stations for *Scolopandrium.*" Mr. Clute contrasted the wide distribution of the Hart's tongue fern in the old world, from the Azores to Japan, with the extremely local North American occurrence, in five areas only, Mexico, Tennessee, Central New York, Owen Sound in Ontario, and New Brunswick. The Central New York locality was made known early in the present century through John Williamson, and was visited by Pursh in July, 1807, who found it five miles west of Syracuse on the farm of J. Geddes, where it has recently been rediscovered. About 1827, Wm. Cooper discovered it at Chittenango Falls where Mr. Clute found hundreds of plants growing last summer. Mr. Clute described the Chittenango ravine and its ferns. On sunny exposures of the limestone walls of the ravine grow rue spleenwort and purple cliff-brake in quanities; in shady places, the slender cliff-brake; on the talus, upon the larger bowlders,

the walking fern, and in the shade of these bowlders, the Scolopendrium, chiefly in clusters of 2 to 6, at first erect, finally somewhat drooping, and ripe in September. Mr. Clute added that the species seems to be increasing at present, being now under the protection of an association.

Prof. Burgess remarked upon the former scarcity of the fern in that locality as reported to him by Dr. Torrey of Chittenango about 1874, and by Dr. Morong who could find none at his visit about 1876.

Prof. Underwood spoke of the Jamesville locality, also on the corniferous limestone in Onondaga Co., where 20 years ago he found it quite common about two small lakes, but becoming soon exhausted at the one most frequently visited. He queried why it should not occur at other ledges of the corniferous limestone throughout Western New York, and why it should confine itself to that rock here while in England it frequents sandstone, shale and limestone indifferently. Dr. Britton then remarked that in Europe (and Nova Scotia) *Campanula rotundifolia* grows in meadows, but here on rocks; *Cerastium arvense* also grows in Europe in fields, but here on rocks.

Dr. Britton said that Scolopendrium is probably a case like that of Sequoia and Brasenia of originally much wider distribution, where the isolated plants owe their survival to favorable conditions. He cited Epipactis among orchids as a parallel in distribution, confined here to Central New York and Ontario, but wide-spread in the old world.

Mr. Benj. D. Gilbert added an interesting comparison of the growth of Scolopendrium at stations where he had collected it at Jamesville and Chittenango Falls, also in southern France, northern Italy, and Undercliff in the Isle of Wight. In the warm shelter of the latter place, it is more luxuriant than anywhere else, showing great tendency to sport, displaying forking tips and deeply cordate bases as at Chittenango Falls.

3. The third paper was by Mr. B. D. Gilbert, of Utica, N. Y., entitled, "New and interesting Ferns from Bolivia," with exhibition of specimens of two new ferns, *Blechnum nigro-squamatum* and *Nephrodium villosum inæquilaterale* Gilbert, the first peculiar in being fully pinnate, the second in being a one-sided dwarf persistently under a foot and a half high, instead of 4 or 5 feet as its type.

4. The fourth paper, also by Mr. Gilbert, "Jamaica, the Fern-Lover's Paradise, described the abundance of species and of individuals which the speaker had collected there, illustrating the subject by numerous specimens. He remarked that Swartz in his *Species filicum*, 1783–'86, enumerating all then known ferns, described 709 species; of which 149 were from Jamaica; the Jamaican number was raised to 300 by

Grisebach and now to 500 by resident botanists there, an estimate confirmed by Mr. Gilbert. Probably no other equal area produced half that number. Among reasons which account for this are the warm latitude of Jamaica, its south shore sheltered from coolor breezes by a mountain-wall, its mountains themselves rising to 7,000 feet and reaching into a cool temperate climate, and its great variation in moisture, with daily rains in the mountains and sometimes but twice in six months on the plain. Mr. Gilbert described in particular his experiences with the tree-ferns reached by a long journey on foot, high in the Blue Mountains, there forming unmixed groves, their stems supplying the only wood readily obtainable. One, *Alsophila armata*, reaches 50 feet in height, though its slender stem is but a few inches in diameter. No class of ferns is as yet so poorly described, as the tree-ferns; description should be from the living specimen and at the locality; the only such in English are those in Thwaites' Flora of Ceylon. Jamaica is remarkable in particular for its numerous Filmy Ferns, 26 species (out of 280 known); these are all in the three eastern parishes. In the east part *Blechnum occidentalis* is the common fern of the roadsides; *Polypodium reptans* was seen everywhere, now growing erect; one bank 30 x 25 feet was completely covered with *Gleichenia pectinacea*. The great number of endemic species is surprising; as if the work of differentiation had gone on there with greater activity and vital power than anywhere else in the world; every genus in Jamaica shows one or more endemic species.

Mr. Gilbert closed by exhibiting specimens of three new species from Jamaica, belonging to *Asplenium*, *Dryopteris* and *Polypodium*, and also of a number of rare species as *Entomosora campbellii*, *Gymnogramma schizophylla* and *Adiantum candollei*. His paper was discussed by President Brown, Prof. Underwood and Dr. Rusby, the latter referring to the uses made of tree-ferns in New Zealand, as compared with the use for timber and for posts in Jamaica.—EDWARD S. BURGESS, *Secretary.*

The Chicago Academy of Sciences.—The spring course of lectures for 1897 were as follows: March 12. Amelia Weed Holbrook, "*The Antiquity of (so-called) Modern Inventions.*" March 19. Alja Robinson Crook, Ph. D., Professor of Mineralogy and Petrology, Northwestern University. "*Some Geological Causes of the Scenery of Yellowstone National Park.*" Illustrated with stereopticon. March 26. Frank Collins Baker, B. S. Secretary and Curator, Chicago Academy of Sciences. "*The History of Creation as Revealed in the Rocks.*" In

this lecture, ideal landscapes and curious animals of prehistoric ages was shown by the stereopticon. April 2. A. W. Hitt, M. D. "*Leprosy, its Causes and Prevalence.*" Illustrated with stereopticon. This lecture was a popular talk upon this little known subject. April 9. Frank Collins Baker, B. S. "*Types of Animals.*" This lecture was a repetition by request, with some modifications, of the lecture given in February on the Evolution of Animals. The school children were particularly invited, as it was intended more for their instruction, than for the older members of the audience. April 16. H. H. Brown, M. D., Professor of Didactic and Clinic Ophthalmology, Illinois Medical College. "*The Eye.*"

The Biological Society of Washington.—The 274th regular meeting was held on Saturday evening, March 27, 1897, in the Assembly Hall of the Cosmos Club, after Brief Informal Notes and Exhibition of Specimens, the following communications were read: M. B. Waite, "Factors Governing Pear Blight"; Theo. Holm, "The Grass Embryo and its Constituents"; E. A. De Schweinitz, "Some Methods of Generating Formaldehyde and its use as a Disinfectant.—FREDERIC A. LUCAS, *Secretary.*

Anthropological Society of Washington.—The 263d Regular Meeting of the Society was held in the Assembly Hall of the Cosmos Club, on Tuesday, April 20. "Scopelism," Dr. Robert Fletcher; "Unusual Frequency of Wormian Bones in the Coronal Suture of Artifically Deformed Kwakiutl Crania," Mr. George A. Dorsey; "Measurements and Indices of the Long Bones of the Kwakiutl and Salish Indians," Mr. George A. Dorsey.—WESTON FLINT, *Secretary Board of Managers.*

N. S. I. S.—The Ordinary Monthly Meeting of the Nova Scotian Institute of Sciences were held in the Legislative Council Chamber, Province Building, Halifax, on Monday, the 12th of April. The following papers were read: "A Note on our Calcareous Algæ," by A. H. MacKay, Esq., LL. D., F. S. Sc., F. R. S. C. Superintendent of Education; "Zoological Notes," by Harry Piers, Esq.—HARRY PIERS, *Secretary.*

The Association of American Anatomists.—March 30, 1897. —The next meeting of this Association will be held in Washington city in connection with the Congress of American Physicans and Surgeons, Tuesday to Thursday, May 4 to 6, 1897.

The meetings of the Congress will be held in the Columbia Theater, corner of Twelfth and F Streets, N. W., from 2 to 5 P. M. daily. Those

of this Association accordingly will be held in the mornings, from 9 to 12.30, unless otherwise ordered by the Association, and in the Physical Laboratory of Columbian, University, corner Fifteenth and H. Streets, N. W.

The titles of but four papers have thus far been received, to wit: by Dr. Wilder, "Notes on the Biceps" and "The definite encephalic segments and their designation;" by Dr. Stroud, "Comparative anatomy of the cerebellum" and "On Brain Preservation;" all of them illustrated by specimens, photographs and charts.

Members who intend to read papers or present specimens will please send titles to the Secretary as soon as convenient, that they may appear on the printed program.

The statue of Prof. Samuel D. Gross will be dedicated during the Congress.

Blank forms of application for membership will be sent on application.—D. S. LAMB, *Secretary and Treasurer.*

The Academy of Science of St. Louis.—At the meeting of the Academy of Science of St. Louis held on the evening of April 5, 1897, Professor Frederic Starr, of the University of Chicago, briefly addressed the Academy on the functions of such organizations, with especial reference to the local problems. Mr. H. C. Irish presented a paper on the relations of the unfolding of plants in spring to meteorological conditions, in which were embodied deductions drawn from a series of observations made at the Missouri Botanical Garden, and those by other observers, extending back to the time of Stillingfleet, in the last century. Mr. Charles Robertson presented for publication a paper entitled North American Bees—Descriptions and Synonyms.—WM. TRELEASE, *Secretary.*

The Botanical Seminar of the University of Nebraska.—February 27, 1897.—The Periodicity of Flowering, Mr. F. E. Clements; Herbaceous Vegetation-Forms, Mr. Roscoe Pound; The Karyology of the *Ascomycetes*; a Review, Mr. C. L. Shear; Organogeny of the Genus *Prunus*, Mr. A. T. Bell. March 27, 1897.—Chimney-shaped Stomata in Greatly-thickened Epidermis, Dr. C. E. Bessey; Seed Production and Disseminations as Accessory Characters, Mr. F. E. Clements; Statistics Ecological and Distributional of Nebraska Grasses, Mr. Roscoe Pound; The Origin of the rudimentary Ovules in Clematis, Mr. Ernst A. Bessey.